CLAIMS

What is claimed is:

1. A method of inhibiting the interaction of a cell bearing mammalian CC-chemokine receptor 1 (CCR1) with a ligand thereof, comprising contacting said cell with an effective amount of an antibody or antigen-binding fragment thereof which binds to mammalian CC-chemokine receptor 1 (CCR1) or portion of said receptor and inhibits binding of said ligand to the receptor, wherein said antibody or antigen-binding fragment thereof binds the second extracellular loop of said receptor.

2. A method according to Claim 1, wherein the cell is selected from the group consisting of lymphocytes, monocytes, granulocytes, neutrophils, T cells, basophils, and cells comprising a recombinant nucleic acid encoding CCR1 or a portion thereof.

3. A method according to Claim 2, wherein the cell is a T cell selected from the group consisting of CD26+ cells and CD45RO+ cells.

4. A method according to Claim 1, wherein said antibody or antigen-binding fragment thereof inhibits one or more functions associated with binding of the ligand to said receptor.

5. A method according to Claim 1, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

6. A method according to Claim 1, wherein the ligand is a chemokine.

7. A method according to Claim 6, wherein the chemokine is any one or more of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 or MPIF.

8. A method according to Claim 1, wherein the antibody or antigen-binding fragment thereof is selected from the group consisting of:

a) monoclonal antibody 2D4;

b) antigen-binding fragments of (a) which bind to mammalian CC- chemokine receptor 1 (CCR1) or a portion thereof; and

c) combinations of the foregoing.

9. A method according to Claim 1, wherein said antibody or antigen-binding fragment is a monoclonal antibody or fragment thereof.

10. A method according to Claim 1, wherein said antibody or antigen-binding fragment is a chimeric antibody or fragment thereof.

11. A method according to Claim 1, wherein said antibody or antigen-binding fragment is a human antibody or fragment thereof.

12. A method according to Claim 1, wherein said antibody or antigen-binding fragment is a humanized antibody or fragment thereof.

13. A method according to Claim 12, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

14. A method according to Claim 12, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

15. A method according to Claim 14, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

16. A method according to Claim 1, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

17. A method according to Claim 16, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

18. A method according to Claim 17, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

19. A method according to Claim 1, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

20. A method of inhibiting the interaction of a cell bearing mammalian CC-chemokine receptor 1 (CCR1) with a ligand thereof, comprising contacting said cell with an effective amount of an antibody or antigen-binding fragment thereof which binds to mammalian CC-chemokine receptor 1 (CCR1) or portion of said receptor and inhibits binding of said ligand to the receptor, wherein said antibody or antigen-binding fragment thereof can compete with monoclonal antibody 2D4 for binding to said receptor.

21. A method according to Claim 20, wherein said antibody or antigen-binding fragment thereof inhibits one or more functions associated with binding of the ligand to said receptor.

22. A method according to Claim 20, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

23. A method according to Claim 20, wherein the ligand is a chemokine.

24. A method according to Claim 23, wherein the chemokine is selected from the group consisting of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 and MPIF.

25. A method according to Claim 20, wherein said antibody or fragment is a monoclonal antibody or fragment thereof.

26. A method according to Claim 20, wherein said antibody or fragment is a chimeric antibody or fragment thereof.

27. A method according to Claim 20, wherein said antibody or fragment is a human antibody or fragment thereof.

28. A method according to Claim 20, wherein said antibody or fragment is a humanized antibody or fragment thereof.

29. A method according to Claim 28, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

30. A method according to Claim 28, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

31. A method according to Claim 30, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

32. A method according to Claim 20, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

33. A method according to Claim 32, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

34. A method according to Claim 33, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

35. A method according to Claim 20, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

36. A method of inhibiting a function associated with binding of a chemokine to a mammalian CC-chemokine receptor 1 (CCR1) or a functional portion of said receptor, comprising contacting a composition comprising the receptor or functional portion thereof with an effective amount of an antibody or antigen-binding fragment thereof which binds to a mammalian CC-chemokine receptor 1 (CCR1) or portion of said receptor, wherein said antibody or fragment inhibits binding of said chemokine to mammalian CC-chemokine receptor 1 (CCR1) and inhibits one or more functions associated with binding of the chemokine to the receptor, and wherein said antibody or antigen-binding fragment thereof binds the second extracellular loop of said receptor.

37. A method according to Claim 36, wherein the chemokine is any one or more of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 or MPIF.

38. A method according to Claim 36, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

39. A method according to Claim 36, wherein the antibody or antigen-binding fragment is selected from the group consisting of:

a) monoclonal antibody 2D4;

b) antigen-binding fragments of (a) which bind to mammalian CC-chemokine receptor 1 (CCR1) or a portion thereof; and

c) combinations of the foregoing.

40. A method according to Claim 36, wherein said antibody or antigen-binding fragment is a monoclonal antibody or fragment thereof.

41. A method according to Claim 36, wherein said antibody or antigen-binding fragment is a chimeric antibody or fragment thereof.

42. A method according to Claim 36, wherein said antibody or antigen-binding fragment is a human antibody or fragment thereof.

43. A method according to Claim 36, wherein said antibody or antigen-binding fragment is a humanized antibody or fragment thereof.

44. A method according to Claim 43, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

45. A method according to Claim 43, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

46. A method according to Claim 45, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

47. A method according to Claim 36, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

48. A method according to Claim 47, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

49. A method according to Claim 48, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

50. A method according to Claim 36, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

51. A method of inhibiting a function associated with binding of a chemokine to a mammalian CC-chemokine receptor 1 (CCR1) or a functional portion of said receptor, comprising contacting a composition comprising the receptor or functional portion thereof with an effective amount of an antibody or antigen-binding fragment thereof which binds to a mammalian CC-chemokine receptor 1 (CCR1) or portion of said receptor, wherein said antibody or fragment inhibits binding of said chemokine to mammalian CC-chemokine receptor 1

(CCR1) and inhibits one or more functions associated with binding of the chemokine to the receptor, and wherein said antibody or antigen-binding fragment thereof can compete with monoclonal antibody 2D4 for binding to said receptor.

52. A method according to Claim 51, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

53. A method according to Claim 51, wherein the chemokine is selected from the group consisting of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 and MPIF.

54. A method according to Claim 51, wherein said antibody or fragment is a monoclonal antibody or fragment thereof.

55. A method according to Claim 51, wherein said antibody or fragment is a chimeric antibody or fragment thereof.

56. A method according to Claim 51, wherein said antibody or fragment is a human antibody or fragment thereof.

57. A method according to Claim 51, wherein said antibody or fragment is a humanized antibody or fragment thereof.

58. A method according to Claim 57, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

59. A method according to Claim 57, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

60. A method according to Claim 59, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

61. A method according to Claim 51, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

62. A method according to Claim 61, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

63. A method according to Claim 62, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

64. A method according to Claim 51, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

65. A method of inhibiting leukocyte trafficking in a patient, comprising administering to the patient a composition comprising an effective amount of an antibody or antigen-binding fragment thereof which binds to a mammalian CC-chemokine receptor 1 (CCR1) or portion of said receptor and inhibits binding of a ligand to the receptor, wherein said antibody or antigen-binding fragment thereof binds the second extracellular loop of said receptor.

66. A method according to Claim 65, wherein said antibody or antigen-binding fragment thereof inhibits one or more functions associated with binding of the ligand to said receptor.

67. A method according to Claim 65, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

68. A method according to Claim 65, wherein the ligand is a chemokine.

69. A method according to Claim 68, wherein the chemokine is any one or more of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 or MPIF.

70. A method according to Claim 65, wherein the antibody or antigen-binding fragment thereof is selected from the group consisting of:

a) monoclonal antibody 2D4;

b) antigen-binding fragments of (a) which bind to mammalian CC-chemokine receptor 1 (CCR1) or a portion thereof; and

c) combinations of the foregoing.

71. A method according to Claim 65, wherein said antibody or antigen-binding fragment is a monoclonal antibody or fragment thereof.

72. A method according to Claim 65, wherein said antibody or antigen-binding fragment is a chimeric antibody or fragment thereof.

73. A method according to Claim 65, wherein said antibody or antigen-binding fragment is a human antibody or fragment thereof.

74. A method according to Claim 65, wherein said antibody or antigen-binding fragment is a humanized antibody or fragment thereof.

75. A method according to Claim 74, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

76. A method according to Claim 74, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

77. A method according to Claim 76, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

78. A method according to Claim 65, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

79. A method according to Claim 78, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

80. A method according to Claim 79, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

81. A method according to Claim 65, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

82. A method of inhibiting leukocyte trafficking in a patient, comprising administering to the patient a composition comprising an effective amount of an

antibody or antigen-binding fragment thereof which binds to a mammalian CC-chemokine receptor 1 (CCR1) or portion of said receptor and inhibits binding of a ligand to the receptor, wherein said antibody or antigen-binding fragment thereof can compete with monoclonal antibody 2D4 for binding to said receptor.

83. A method according to Claim 82, wherein said antibody or antigen-binding fragment thereof inhibits one or more functions associated with binding of the ligand to said receptor.

84. A method according to Claim 82, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

85. A method according to Claim 82, wherein the ligand is a chemokine.

86. A method according to Claim 85, wherein the chemokine is selected from the group consisting of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 and MPIF.

87. A method according to Claim 82, wherein said antibody or fragment is a monoclonal antibody or fragment thereof.

88. A method according to Claim 82, wherein said antibody or fragment is a chimeric antibody or fragment thereof.

89. A method according to Claim 82, wherein said antibody or fragment is a human antibody or fragment thereof.

90. A method according to Claim 82, wherein said antibody or fragment is a humanized antibody or fragment thereof.

91. A method according to Claim 90, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

92. A method according to Claim 90, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

93. A method according to Claim 92, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

94. A method according to Claim 82, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

95. A method according to Claim 94, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

96. A method according to Claim 95, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

97. A method according to Claim 82, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

98. A method of treating a CC-chemokine receptor 1 (CCR1)-mediated disorder in a patient, comprising administering to the patient an effective amount of an

antibody or antigen-binding fragment thereof which binds to mammalian CC-chemokine receptor 1 (CCR1) or portion thereof and inhibits binding of a ligand to the receptor, wherein said antibody or antigen-binding fragment thereof binds the second extracellular loop of said receptor.

99. A method according to Claim 98, wherein said antibody or antigen-binding fragment thereof inhibits one or more functions associated with binding of the ligand to said receptor.

100. A method according to Claim 98, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

101. A method according to Claim 98, wherein the ligand is a chemokine.

102. A method according to Claim 101, wherein the chemokine is any one or more of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 or MPIF.

103. A method according to Claim 98, wherein the antibody or antigen-binding fragment thereof is selected from the group consisting of:

a) monoclonal antibody 2D4;

b) antigen-binding fragments of (a) which bind to mammalian CC-chemokine receptor 1 (CCR1) or a portion thereof; and

c) combinations of the foregoing.

104. A method according to Claim 98, wherein said antibody or antigen-binding fragment is a monoclonal antibody or fragment thereof.

105. A method according to Claim 98, wherein said antibody or antigen-binding fragment is a chimeric antibody or fragment thereof.

106. A method according to Claim 98, wherein said antibody or antigen-binding fragment is a human antibody or fragment thereof.

107. A method according to Claim 98, wherein said antibody or antigen-binding fragment is a humanized antibody or fragment thereof.

108. A method according to Claim 107, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

109. A method according to Claim 107, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

110. A method according to Claim 109, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

111. A method according to Claim 98, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

112. A method according to Claim 111, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

113. A method according to Claim 112, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

114. A method according to Claim 98, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

115. A method of treating a CC-chemokine receptor 1 (CCR1)-mediated disorder in a patient, comprising administering to the patient an effective amount of an antibody or antigen-binding fragment thereof which binds to mammalian CC-chemokine receptor 1 (CCR1) or portion thereof and inhibits binding of a ligand to the receptor, wherein said antibody or antigen-binding fragment thereof can compete with monoclonal antibody 2D4 for binding to said receptor.

116. A method according to Claim 115, wherein said antibody or antigen-binding fragment thereof inhibits one or more functions associated with binding of the ligand to said receptor.

117. A method according to Claim 115, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

118. A method according to Claim 115, wherein the ligand is a chemokine.

119. A method according to Claim 118, wherein the chemokine is selected from the group consisting of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 and MPIF.

120. A method according to Claim 115, wherein said antibody or fragment is a monoclonal antibody or fragment thereof.

121. A method according to Claim 115, wherein said antibody or fragment is a chimeric antibody or fragment thereof.

122. A method according to Claim 115, wherein said antibody or fragment is a human antibody or fragment thereof.

123. A method according to Claim 115, wherein said antibody or fragment is a humanized antibody or fragment thereof.

124. A method according to Claim 123, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

125. A method according to Claim 123, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

126. A method according to Claim 125, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

127. A method according to Claim 115, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

128. A method according to Claim 127, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

129. A method according to Claim 128, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

130. A method according to Claim 115, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

131. A method of treating an inflammatory disorder in a patient, comprising administering to the patient an effective amount of an antibody or antigen-binding fragment thereof which binds to mammalian CC-chemokine receptor 1 (CCR1) or portion thereof and inhibits binding of a ligand to the receptor, wherein said antibody or antigen-binding fragment thereof binds the second extracellular loop of said receptor.

132. A method according to Claim 131, wherein said antibody or antigen-binding fragment thereof inhibits one or more functions associated with binding of the ligand to said receptor.

133. A method according to Claim 131, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

134. A method according to Claim 131, wherein the ligand is a chemokine.

135. A method according to Claim 134, wherein the chemokine is any one or more of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 or MPIF.

136. A method according to Claim 131, wherein the antibody or antigen-binding fragment thereof is selected from the group consisting of:

a) monoclonal antibody 2D4;

b) antigen-binding fragments of (a) which bind to mammalian CC-chemokine receptor 1 (CCR1) or a portion thereof; and

c) combinations of the foregoing.

137. A method according to Claim 131, wherein said antibody or antigen-binding fragment is a monoclonal antibody or fragment thereof.

138. A method according to Claim 131, wherein said antibody or antigen-binding fragment is a chimeric antibody or fragment thereof.

139. A method according to Claim 131, wherein said antibody or antigen-binding fragment is a human antibody or fragment thereof.

140. A method according to Claim 131, wherein said antibody or antigen-binding fragment is a humanized antibody or fragment thereof.

141. A method according to Claim 140, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

142. A method according to Claim 140, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

143. A method according to Claim 142, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

144. A method according to Claim 131, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

145. A method according to Claim 144, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

146. A method according to Claim 145, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

147. A method according to Claim 131, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.

148. A method of treating an inflammatory disorder in a patient, comprising administering to the patient an effective amount of an antibody or antigen-binding fragment thereof which binds to mammalian CC-chemokine receptor 1 (CCR1) or portion thereof and inhibits binding of a ligand to the receptor, wherein said antibody or antigen-binding fragment thereof can compete with monoclonal antibody 2D4 for binding to said receptor.

149. A method according to Claim 148, wherein said antibody or antigen-binding fragment thereof inhibits one or more functions associated with binding of the ligand to said receptor.

150. A method according to Claim 148, wherein said mammalian CC-chemokine receptor 1 is a human CC-chemokine receptor 1.

151. A method according to Claim 148, wherein the ligand is a chemokine.

152. A method according to Claim 151, wherein the chemokine is selected from the group consisting of MIP-1α, RANTES, MCP-2, MCP-3, leukotactin-1, HCC-1 and MPIF.

153. A method according to Claim 148, wherein said antibody or fragment is a monoclonal antibody or fragment thereof.

154. A method according to Claim 148, wherein said antibody or fragment is a chimeric antibody or fragment thereof.

155. A method according to Claim 148, wherein said antibody or fragment is a human antibody or fragment thereof.

156. A method according to Claim 148, wherein said antibody or fragment is a humanized antibody or fragment thereof.

157. A method according to Claim 156, wherein said humanized antibody or fragment thereof comprises one or more antigen-binding regions of monoclonal antibody 2D4.

158. A method according to Claim 156, wherein said humanized antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

159. A method according to Claim 158, wherein said humanized antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

160. A method according to Claim 148, wherein said antibody or antigen-binding fragment is a recombinant antibody or antigen-binding fragment thereof.

161. A method according to Claim 160, wherein said recombinant antibody or fragment thereof comprises one or more complementarity-determining regions of monoclonal antibody 2D4.

162. A method according to Claim 161, wherein said recombinant antibody or fragment thereof comprises six complementarity-determining regions of monoclonal antibody 2D4.

163. A method according to Claim 148, wherein said antigen-binding fragment is selected from the group consisting of an Fv fragment, an Fab fragment, an Fab' fragment and an $F(ab')_2$ fragment.